Improving Timely Follow-up After High Blood Pressures In Rheumatology Clinics Using Staff Protocols

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Background:

Hypertension (HTN) is the most prevalent cardiovascular disease (CVD) risk factor among adults with rheumatic conditions.

- ~50% of US adults with hypertension lack control (AHA 2014)
- Rheumatologists did not discuss in 2/3 of RA visits with BP >/=160/100 (Bartels 2013)
- Number needed to treat (NNT) to prevent a CVD event =11

Primary care (PC) staff protocols raise HTN control to 80%

- HTN protocols can save more lives than anything else (CDC Friedan)
- **HTN Protocols NOT tested in rheumatology clinics**

Objective: To study the feasibility and impact of a staff HTN protocol intervention to facilitate timely primary care follow-up for patients with high blood pressures at rheumatology visits.

Methods:

Design: Pre/post open feasibility study

Setting: Three academic rheumatology clinics

Nov 2014-May 2015 (pre period Jan 2012-Oct 2014)

Inclusion criteria: Age ≥18 years old, BP ≥ 140/90, and at least 1 PC & 1 Rheum visit in 24mos for 1° outcome

Intervention components:

(1) Educating staff on hypertension

(2) Electronic Health Record (HER) alerts for staff to re-measure BP if ≥140/90

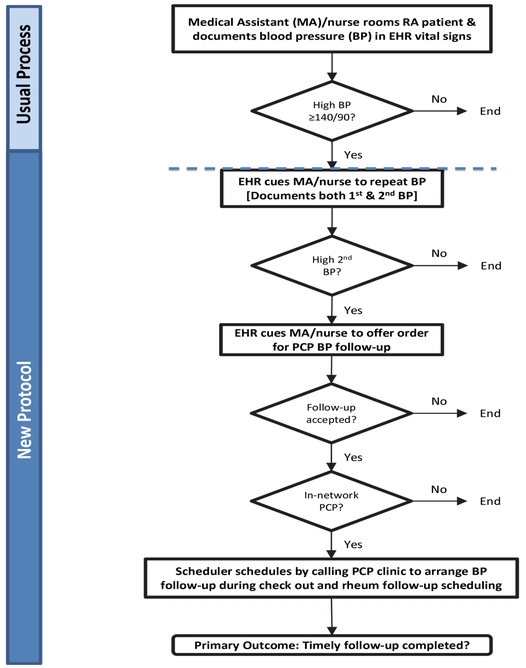
(3) EHR cued follow up scheduling if confirmed high

(4) Monthly audit feedback for clinic staff

Primary Outcome: Timely BP follow-up in primary care <4 weeks per quality measure

Analysis: Multivariable logistic regression comparing odds ratios (OR & 95% CI)

Figure 1. Rheum Hypertension Protocol Intervention



Results:

Table 1. Description of visit-level patient characteristics among pre & protocol visits

		BP Elevation n=5667		
		Pre-protocol visits n=4683 (%)	Protocol intervention visits n=689 (%)	p
Age (mean, SD)		59.1241 (14.12)	59.9(13.61)	0.105
Gender	Female	66.3	65.35	0.564
Race	White	90.53	89.13	0.303
Language	English	99.02	98.98	0.922
Married/Partnered		58.21	61.12	0.230
Medicaid (Ever)		12.09	11.28	0.479
Tobacco	Current	10.33	11.05	0.625
BMI quartile Lowes (mean, SD)		32.26 (8.34)	31.84 (7.90)	0.142
Rheumatoid Arthritis		30.15	32.22	0.201
Spondyloarthropathy		12.71	13.82	0.343
Connective Tissue Disease		17.94	19.41	0.276
Other rheum condition		45.27	41.67	0.039
Baseline hypertension*		65.79	68.19	0.148
Cardiovascular disease		24.88	24.9	0.989
Diabetes mellitus		17.08	16.67	0.752
Chronic kidney/ESRD		6.13	7.62	0.082
ACG Comorb score (mean, SD)		1.13 (0.82)	1.13 (0.82)	0.805
Mean Annual Ambulatory visits		7.57 (6.90)	6.93 (6.01)	**0.003**
Mean Annual PCP visits		2.44 (3.34)	2.14 (2.90)	**0.004**
Mean Annual Rheum visits		2.06 (1.95)	1.86 (1.67)	**0.001**
In Network PCP		52.47	55.59	0.074

*Prior HTN diagnosis per Tu algorithm and/or antihypertensive medication.

Table 2. Visit-level care observed pre- and post-protocol among visits with high blood pressures

	Pre-Protocol n=4683 (n(%))	Protocol n=689 (n)	(%)	p
BP Remeasurement	26 (0.56)	401/689	58.20	<0.0001
Confirmed High BP		234/401	58.35	
Any Follow-Up Order Offered	na	180/234	76.92	
Any Education OR Follow-Up	na	191/234	81.62	

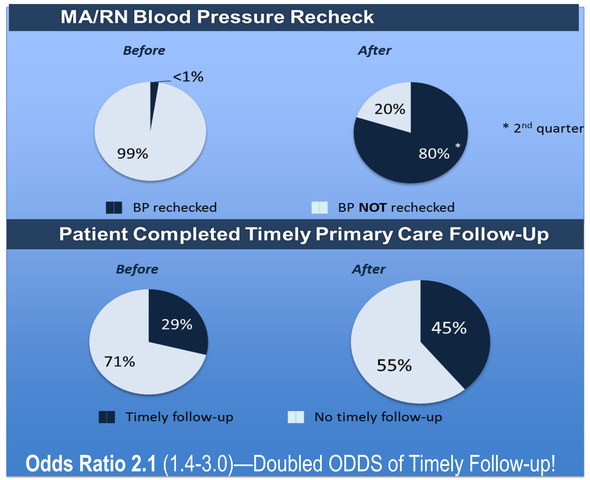


Table 3. Multivariable Adjusted Odds Ratios & 95% CI for Timely PC Follow-up

	OR	95% CI	p
HTN Staff Protocol Intervention	2.1	(1.4-3.0)	<0.0001
Race Black compared to White	1.7	(1.1-2.5)	
Diabetes compared to No DM	1.3	(1.01-1.6)	
Baseline PC Utilization	1.1	(1.09-1.18)	

Adjusted Model Covariates: Sociodemographics, comorbidity, utilization & clinic

Conclusion:

Limitations: Single center, quasi experimental pre-post design, lack of longitudinal BP control outcome data

Our intervention was feasible for usual rheumatology clinic staff and it doubled rates of timely BP follow-up. Future studies should examine this intervention in other rheumatology clinics, and its impact on HTN control to reduce CVD risk in rheumatology patients.

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